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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,292	08/22/2003	Oksana Penezina	57315 (45858)	9380

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EXAMINER

VO. HAI

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/646,292

Applicant(s)

PENEZINA ET AL.

Examiner

Hai Vo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) 23-47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0822, 0108, 0514.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-22, drawn to a composite porous membrane, classified in class 210, subclass 490.
- II. Claims 23-47, drawn to a method of making a composite porous membrane, classified in class 427, subclass 245.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made.

The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process such as the coating is performed using a immersion passive method.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Kathryn Piffat on 03/24/2005 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-22. Affirmation of this election must be made by applicant in replying to this Office action. Claims 23-47 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

2. Claim 18 is objected to because of the following informalities: A list of the photoinitiators is preferably incorporated in the claim in accordance with US Patent Practice. Appropriate correction is required.

Drawings

3. Figure 1A should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 6-13, and 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "the hydrophobic group" in line 1. There is insufficient antecedent basis for this limitation in the claim. The same token is applied to "the hydrophilic group" of claim 10 and "the photoinitiator" of claim 16.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-6, 9-14, 19 and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Steuck et al (US 4,618,533). Steuck teaches a composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules. The hydrophobic substrate is polyvinylidene fluoride membrane having a pore size of 0.2 μm (examples 1-6). Each difunctional surface-modifying molecule comprises a hydrophobic portion and hydrophilic portion wherein the hydrophobic portion includes difunctional acrylates such as tetraethylene glycol diacrylate which

reads on Applicants' hydrophobic alkyl (column 4, lines 1-5). Likewise, it is clearly apparent that the hydrophobic does not form covalent bonds with the surface. Like material has like property. This is in line with *In re Spada*, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties. The hydrophilic portion includes hydroxyalkyl methacrylate which has two crosslinking active groups: carbon-carbon double bond and COO- group (column 3, lines 50-60). Steuck discloses the use of acrylic acid as a hydrophilic monomer, which reads on Applicants' negatively charged group. Steuck discloses the use of dimethylaminoethyl methacrylate as a hydrophilic monomer, which reads on Applicants' positively charged group. Steuck uses azobiscyanovaleric acid as a polymerization initiator (example 13). Steuck does not specifically disclose the surface-modifying molecules to form a crosslinked hydrophilic polymeric network at the surface of the membrane as well as the hydrophobic portion associated with the substrate. However, it appears that Steuck uses the same materials and technique to modify the surface of the porous membrane. The porous membrane is immersed in the solution of the monomers to form a coating on the surface of the porous membrane and a sheet of porous membrane saturated with the reactant solution is transferred to a reaction zone where it is exposed to energy to effect the polymerization reaction. Therefore, it is the examiner's position that the surface-modifying molecules would be inherently crosslinked to form a crosslinked hydrophilic polymeric network at the surface of the membrane while the hydrophobic portion

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comprising difunctional acrylates will be inherently associated with the substrate.

It is the examiner's position that Steuck anticipates or strongly suggests the claimed subject matter. Note **In re Best** 195 USPQ at 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made under 35 USC 102.

9. Claims 1-6, 9-14, and 16-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wang et al (US 5,137,633). Wang teaches a composite porous membrane comprising a hydrophobic substrate coated with difunctional surface-modifying molecules. The hydrophobic substrate is polyvinylidene fluoride membrane having a pore size of 0.05 to 10 μm (column 3, lines 15, and 25-30). Each difunctional surface-modifying molecule comprises a hydrophobic portion and hydrophilic portion wherein the hydrophobic portion includes difunctional acrylates such as tetraethylene glycol diacrylate which reads on Applicants' hydrophobic alkyl (column 4, lines 64-65). Likewise, it is clearly apparent that the hydrophobic does not form covalent bonds with the surface. Like material has like property. This is in line with **In re Spada**, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties. The hydrophilic portion includes hydroxyalkyl methacrylate which has two crosslinking active groups: carbon-carbon double bond and COO- group (column 4, lines 42-43). Wang discloses the use of methacrylamide as a hydrophilic monomer, which reads on Applicants' neutral charge. Wang discloses the use of acrylic

acid as a hydrophilic monomer, which reads on Applicants' negatively charged group. Wang discloses the coating comprising epichlorohydrin carrying positively charged group. Wang uses the same material such as benzophenone as a photoinitiator as Applicants (column 4, lines 55-56). Wang does not specifically disclose the surface-modifying molecules to form a crosslinked hydrophilic polymeric network at the surface of the membrane, the hydrophobic portion associated with the substrate and the photoinitiator preferentially adsorbed by the substrate surface. However, it appears that Wang uses the same materials (hydrophilic portions, hydrophobic portion and photoinitiators) and the same technique to modify the surface of the porous membrane. The porous membrane is immersed in the solution of the monomers to form a coating on the surface of the porous membrane and a sheet of porous membrane saturated with the reactant solution is transferred to a reaction zone where it is exposed to energy to effect the polymerization reaction. Therefore, it is the examiner's position that the surface-modifying molecules would be inherently crosslinked to form a crosslinked hydrophilic polymeric network at the surface of the membrane while the hydrophobic portion comprising difunctional acrylates will be inherently associated with the substrate. Additionally, the photoinitiators are preferentially adsorbed by the substrate surface. It is the examiner's position that Wang anticipates or strongly suggests the claimed subject matter. Note *In re Best* 195 USPQ at 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made under 35 USC 102.

10. Claims 1-19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Jing et al (US 6,183, 901) as evidenced by the article "UV Refinish Primer and Clear Coat". Jing teaches a composite porous membrane comprising a hydrophobic substrate coated with a protective coating layer made from difunctional surface-modifying molecules. The hydrophobic substrate is a microporous pseudo-boehmite membrane having a pore size of 0.002 to 1 μm (column 17, lines 55-56). The difunctional surface-modifying molecules are ethoxylated bisphenol A diacrylates (column 12, lines 19-20). Likewise, the hydrophilic portion (acrylate) has two crosslinking active groups: carbon-carbon double bond and COO- group while the hydrophobic portion comprises a bisphenol A group. The hydrophobic group would not substantially form covalent bonds with the membrane surface. The same token is applied to the positive charge, neutral charge and negative charge of the hydrophilic portion of the difunctional surface-modifying molecules. Like material has like property. This is in line with *In re Spada*, 15 USPQ 2d 1655 (1990). Jing discloses the use of a photoinitiator available under the trade name ESCURE KTO from Sartomer (example 1). The "UV Refinish Primer and Clear Coat" article evidences the ESCURE KTO photoinitiator contains the same mono acyl phosphine oxide as those available under tradename IRGACURE 184. The mono acyl phosphine oxide renders the photoinitiator substantially hydrophobic in accordance with Applicants' specification. Therefore, it is the examiner's position that the ESCURE KTO photoinitiator is substantially hydrophobic

because of the presence of the mono acyl phosphine oxide. Jing does not specifically disclose the surface-modifying molecules to form a crosslinked hydrophilic polymeric network at the surface of the membrane, the hydrophobic portion associated with the substrate and the photoinitiator preferentially adsorbed by the substrate surface. However, it appears that Jing uses ethoxylated bisphenol A diacrylates and hydrophobic photosensitizer as a coating material and the same technique to modify the surface of the porous membrane. The porous membrane is immersed in the solution of the monomers to form a coating on the surface of the porous membrane and a sheet of porous membrane saturated with the reactant solution is transferred to a reaction zone where it is exposed to energy to effect the polymerization reaction. Therefore, it is the examiner's position that the surface-modifying molecules would be inherently crosslinked to form a crosslinked hydrophilic polymeric network at the surface of the membrane while the hydrophobic portion will be inherently associated with the substrate. Additionally, the photoinitiator is preferentially inherently adsorbed by the substrate surface. It is the examiner's position that Jing anticipates or strongly suggests the claimed subject matter. Note **In re Best** 195 USPQ at 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made under 35 USC 102.

11. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jing et al (US 6,183, 901) as applied to claim 1 above, and further in view of Hoshi et al (US 6,299,653). Jing teaches the microporous pseudo-boehmite comprising a

polymer binder having an ionically conductive property (column 18, lines 60-63). Jing does not disclose the polymeric binder being polyvinylidene fluoride. Hoshi teaches polyvinylidene fluoride is ionically conductive (column 22, lines 1-5). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use polyvinylidene fluoride as the polymer binder of the microporous pseudo-boehmite motivated by the desire to enhance the ionic conductivity of the membrane.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-1485. The examiner can normally be reached on M,T,Th, F, 7:00-4:30 and on alternating Wednesdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HV

Hai V.

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